

A History of the Georgia Tech Amateur Radio Club

FROM SPARK TO SPACE

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REVISION HISTORY

November 11, 2013 – Initial Release

November 12, 2013 – Corrected Hurricane Hugo damage amount.

March 9, 2014 – Corrected year of Mexican Earthquake in Introduction. Added Revision History.

July 22, 2014 – First year of W4AQL as 1931.

December 6, 2014 – Added information on the start of WREK and picture of EE Building (1967).
Added 2014 QSL card.

September 24, 2015 – Added post World War 2 Shack pictures and information in Chapter 4.

January 18, 2016 – Added an arrow to Figure 5-1.

January 20, 2016 – Updated date of 1972 Field Day and notes in the Chapter 8 timeline.

June 22, 2016 – Corrected spelling from Buzz to Buz Reeves per a K2GL QSL card and personal letters that he signed.

August 16, 2017 – Updated callsign timeline from callbooks 1920-1931.

December 2017 – Added photo of radio club station 4YA. Updated prologue. New section on club member QSL cards. Added information on first dance with music broadcast by radio held in 1920. Added biographical information on Buz Reeves. Expanded Hurricane Hugo relief efforts. Added information on NASA astronauts earning ham radio licenses. Expanded International Space Station QSO.

February 2018 – Corrected year of ISS contact on page 42.

March 2018 - Corrected Frank Roman's name in footnote. Added a recent picture of Alfred Rumble.

August 2018 – Added QSL card from 1970 discovered in the NX7LM personal collegiate QSL album on display at the Collegiate Initiative ARRL Booth, Hamvention 2018.

February 2019 – Added QSL cards from 1937 and 1951. Added 2018 entry to timeline.

January 2020 – Added information from the Georgia Tech Announcement Bulletins from 1907-1918 to Chapter 1. Added QSL card from 1970. Updated timeline from 1907-1918.

December 2021 – Changed source for initial assignment of 4YA to December 1919 QST.

May 2022 – Updated timeline.

August 2022 – Changed title from The First 100 Years of the Georgia Tech Amateur Radio Club to A History of the Georgia Tech Amateur Radio Club.

INTRODUCTION

Few clubs on the campus of Georgia Tech have a longer history than the Georgia Tech Radio Club. The Glee Club claims to be the oldest student organization having formed in 1906. The Band was also active in the early 20th century. Both organizations are still active today.

Although it is not entirely clear when the Radio Club was founded, wireless communication was started by students as early as 1912. The first mention of a Radio Club was in the 1919 Blueprint and the Radio Club has been in existence at Georgia Tech since then.

Over its long history, the Georgia Tech Radio Club has provided quick communication for fellow students, service to country, a path to a professional career in radio and crucial health and welfare information to both students and non-students during times of crisis.

PROLOGUE BY SHERMAN BANKS – W₄ATL

It was the start of the Fall Quarter at Georgia Tech in 1985 and I was sitting at the main operating position of the Georgia Tech Amateur Radio Club shack, located in room E-180 of the Van Leer Electrical Engineering building. I was not studying (which I probably should have been), or looking for DX on the club's new Kenwood TS-930S transceiver, but instead I was working on a project for my part-time job at Georgia Tech that helped pay for school.

The phone rings and I answer it, "Radio Club."

"I'm with WAGA Channel 5 and there has been a major earthquake in Mexico City. There's no communication in or out. Can you get in touch with anyone in the city?"

"Earthquake in Mexico City? Let me see what I can find."

I hook up the club's TH6DXX tri-band antenna located on a 50 foot tower on the roof of the 5-story Van Leer Electrical Engineering building. The Kenwood TS-930S is switched on to the 20 meter band and the antenna pointed to Mexico City. It didn't take much tuning until a strong signal came through the headphones obviously from Mexico City. The operator spoke English well and was giving a very vivid account of the conditions in the city after the earthquake. I switch on the "phone patch" that allowed the phone line to be connected to the audio of the radio. The caller listened for about a minute and then I switched the phone patch off.

"How was that?" I ask.

"We're sending a crew right over."

Chapter 1 - A Wireless Beginning at Georgia Tech

One of the earliest references to radio or wireless communication came from the Georgia Tech Bulletin of 1906-1907 where a “wireless apparatus” was mentioned in the Department of Physics with no additional details (Georgia Tech Announcements 1906-1907, 1907). This publication is equivalent to a course catalog.

The description stayed the same until the April 1913 Bulletin described the construction of a wireless station by three Electrical Engineering seniors.

The construction and installation of this station was the thesis work of three members of the present Senior class in Electrical Engineering. Messrs. Hammond, Lain and Schroeder, working under the direction of one of the faculty members who has had considerable experience along this line and is a licensed operator. Practically all of the apparatus was built in the School shops.

The Aerial is of the “T” type and is composed of 6 strands of Phosphor Bronze wire, 150 feet long and spaced one and one-half feet apart. It is suspended between the towers of two of the buildings, 100 feet above the ground at one end, and 80 feet at the other.

The sending apparatus consists of a 5 K.W. – 25,000 volt transformer, plate glass and leyden jar condensers, tight and loose coupled oscillation transformers, and rotary spark gap.

The receiving apparatus comprises a loose coupled tuning coil, variable condensers, several types of detectors, and a pair of 3,000 ohm telephone receivers (Georgia Tech Announcements 1912-1913, 1913).

The sending range was claimed to be greater than 100 miles and stations were received from as far as the Great Lakes and New York City. The station was open to Seniors in electrical course work and “to others interested in the work.” Next year’s Announcements described the buildings that held the antenna as the Academic Building (Tech Tower) and the Electrical Engineering (Savant) Building. The experiments were performed in the Savant Building on Cherry Street. (Banks, Georgia Tech Radio Club Locations, 2021) Figure 1-1 shows the Savant building with the “T” antenna on the roof.



*Figure 1-1 - The Savant Building which served as the home for Electrical Engineering until 1962. You can see the “T” antenna on the roof of the building with the other end attached to the Tech Tower
This picture was taken approximately 1913. (Georgia Tech Digital Portal, 2020).*

The Georgia Tech Announcements 1913-1914 had the following update on the wireless station:

During the past year, the Wireless Telegraph Station of the Georgia School of Technology has been considerably improved, both as to apparatus and general conditions.

This station has now been licensed by the U.S. Government as an Experimental Station and the call letters 4-X-G assigned to it. Professor Edward Charles Gruen, (ME graduate of Cornell University 1912) of the Drawing Department is in charge. (Georgia Tech Announcements 1913-1914, 1914)

A listing of Radio Stations of the United States, July 1, 1913, confirms the call sign of the wireless station at Georgia Tech was 4XG. The “4” designated the Southeastern United States and all “experimental” stations started with the suffix “X” (Commercial and Government Radio Stations, 1913). The “G” most likely represented the State of Georgia. An experimental license was acquired instead of an educational license since the experimental license had no limitations on power or frequency. Experimental operators were required to avoid interfering with other stations. (Georgia Tech Announcements 1913-1914, 1914)

In 1916 the station was moved to the southwest entrance of the newly built power plant. The antenna was installed between the top of the 200’ tall smokestack at the power plant and the Academic Building.

Amateur Radio was shut down by the US Government when the US entered World War I in 1917 but the US Army allowed experimental radio work and training to continue at Georgia Tech in support of service in the Signal Corps (Georgia Tech Announcements 1917-1918, 1918).

Chapter 2 - Roaring Radio During the 20s

The Commerce Department was in charge of licensing radio operators and stations after World War I. They had no idea how passionate radio amateurs were to their call signs. Or maybe they did know but didn't care. In any case they cancelled all pre-war call signs and reissued new ones. The Y suffix was reserved for technical and training schools. When the World War I ban on transmitting was lifted on October 1, 1919 (Sager, 1994), the Georgia Tech Radio Club applied for and received the first school call sign assigned from the Southeastern USA pool – 4YA (QST's Directory of Calls, 1919).

A FRESHMAN'S HAM RADIO EXPERIENCE

In 1920 a young man by the name of Alfred Rumble, 4FN, traveled by train from Macon, Georgia for his first year at the Georgia School of Technology. Alfred was late in applying to Tech so his dorm was not in the Knowles building like other 1st year students. He had to settle for what would be called overflow housing today. But students then called them “The Shacks” and they were located at the northwest corner of Grant Field in-between Grant Field and the power house. The Shacks consisted of two wood framed buildings each consisting of 8 rooms, no bathrooms, no electricity or heat (Rumble, 1995). Figure 2-1 shows Alfred in his senior picture for the Blueprint. Figure 2-2 shows the shacks as they looked in 1899 and Figure 2-3 shows them in relation to Grant Field about the time Alfred attended Georgia Tech.



Figure 2-1 – From L-R, Alfred Rumble - 4FN in 1924 (Blueprint, 1924) and in 1995 (Alfred Rumble, 2018)



Figure 2-2 - The Shacks circa 1899. Courtesy Georgia Tech Living History (Home Sweet Home? Well, not exactly., 2013).



Figure 2-3 - Grant Field and two white buildings nicknamed The Shacks in 1925. The Shacks provided housing for students that did not get into the regular dormitories.

Courtesy Georgia Tech Living History (Home Sweet Home? Well, not exactly., 2013).

Freshmen, by today's standards, were highly restricted with their on-campus activities. Although Alfred was a very active amateur radio operator, the rules at the time did not permit freshman to keep wireless equipment in their dorm room. Alfred wasn't aware of this rule when he arrived on

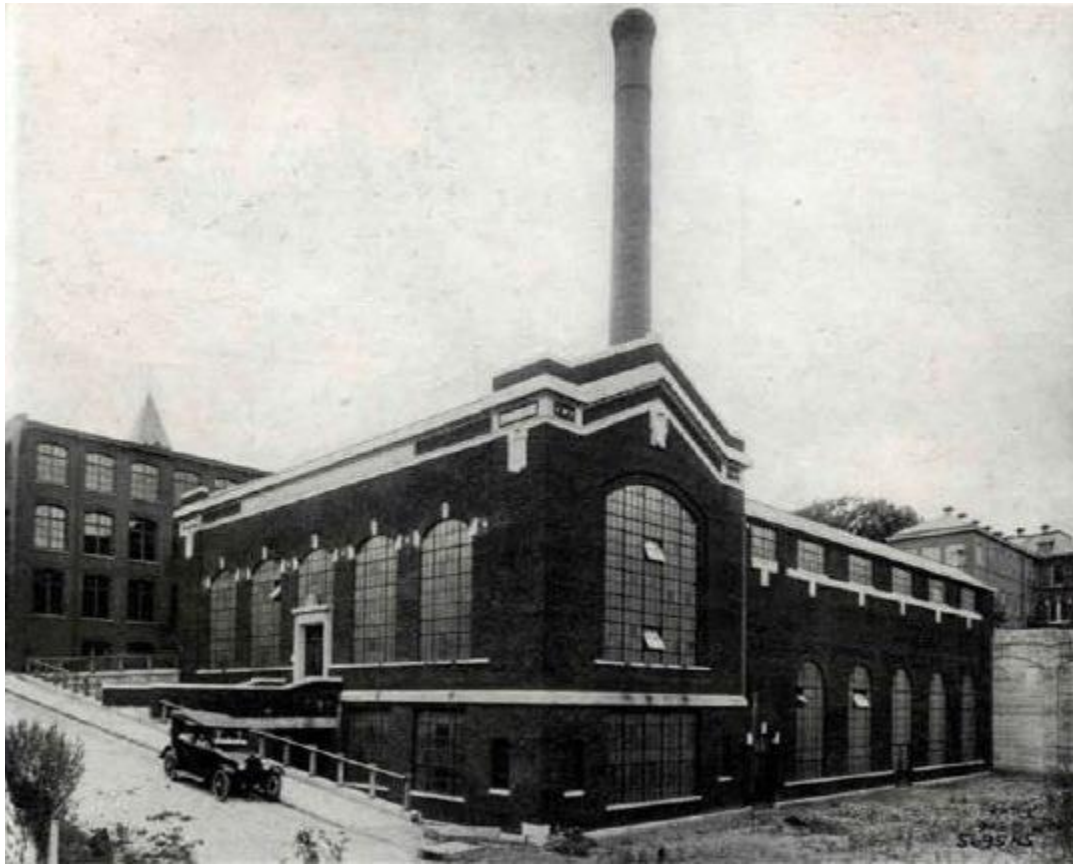
campus with his crystal receiver. So he did what any good ham radio operator would have done, he kept the receiver hidden under a blanket in his room. For an antenna he hung a wire out of his 2nd floor window. With it he listened to local Atlanta radio operators including the Georgia Tech Radio Club station, 4YA.

“Beevo” Webb was the monitor in Alfred’s dorm. Beevo was a member of the Tech football team and football players were usually used as monitors of the dorms. During the day you could come and go freely but at night you were restricted to your dorm.

Since there were no bathrooms in The Shacks, when you had to “take care of business” in the evenings you would yell “Blockhouse Beevo!” to let him know you would be leaving to go to the restroom at the Blockhouse which was located about 100 feet from The Shacks.

One night when listening to his crystal receiver he heard voices coming out of his headphones. Up until that moment he had only heard Morse Code on his receiver and he didn’t know telephony was possible. The voices were coming from 4YA. Eager to see this in action, Alfred ran down the stairs, yelling “Blockhouse Beevo!” and headed to 4YA so he could take a peek at what was happening.

At this time, the Tech Radio Club was located at the top of the Power House shown in Figure 2-4. Ed Merritt was operating the station and let Alfred into the radio room. 4YA had a rotary gap 1 KW Spark Transmitter and a Deforest receiver. Each stage of the receiver was in 4” square sections. The spark transmitter was good for long-wave but not short-wave amateur radio use so 4YA borrowed a more modern transmitter that was owned by L.K. Rush, 4KM. The tall smokestack was used to support the antenna for the station. A picture of this station is in Figure 2-5.



*Figure 2-4 - The Power Plant was the QTH of 4YA after WW1.
The shack was located on the top floor (Blueprint, 1920).*

Alfred could only stay for a few minutes to watch the operation since Beevo would start wondering where he was.

When Alfred became a sophomore he was allowed more privileges on campus which included the ability to operate 4YA. Each member of the Radio Club was allowed one night to operate. Rumble's night was on Tuesday. A key was issued by a professor in the Electrical Engineering department to access the shack.

During this time Alfred moved to Knowles dormitory. His roommate was also interested in wireless. Only local signals could be received with Alfred's crystal receiver and they were both frustrated that they couldn't hear more distant stations. Convinced a better antenna was needed, Alfred's roommate acquired a coil from a Model T car and removed the wire from it to use for the new and improved antenna. Alfred's roommate climbed to the balcony area at the top of the Administration Building and dropped the wire to the ground where Alfred was waiting for it. It was then sent through a 2nd floor window of Knowles and into their room. The wire would have been about 250 feet long to cover the distance from the Tech Tower to Knowles Dormitory. Fortunately the wire was very thin and not visible from the ground. With it they were able to receive stations from all over the eastern part of the United States (Rumble, 1995).

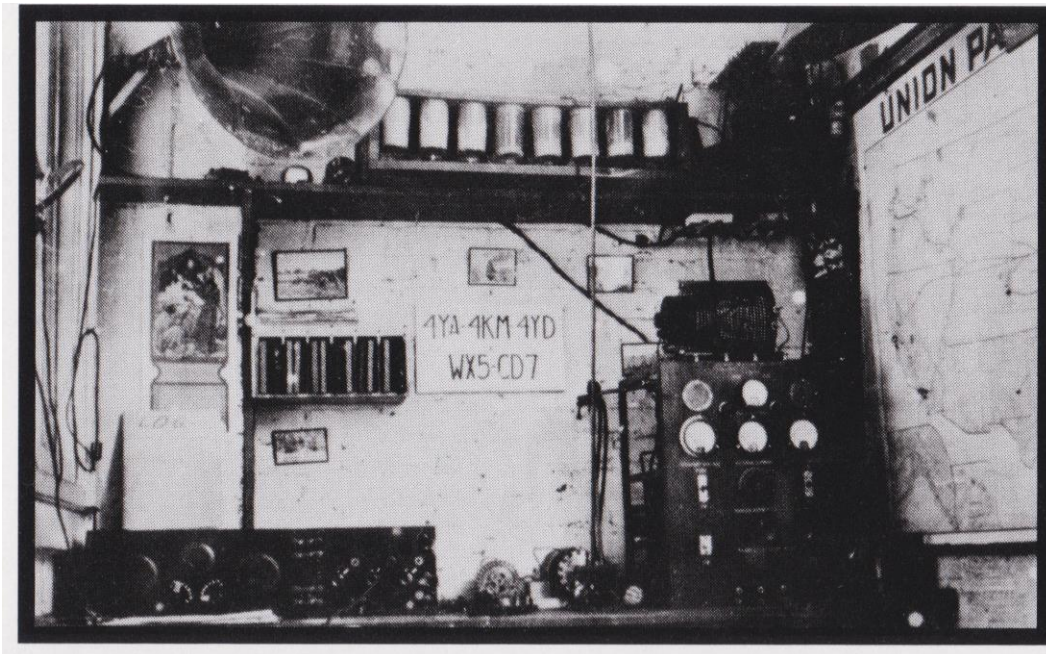


Figure 2-5 - The radio club's station as it looked in 1923 located on the top floor of the power house.

The Radio Club sent messages for students at no charge (Radio Station Will Send Your Messages For Free, 1923). They merely had to slip the message under the door of the station and the club members would send it. This was a great service for international students since a letter to the Philippine Islands would take 35 days to be delivered but by radio it could be delivered in 24 hours (Radio Relay League Has Tech Branch, 1929).

SIGNAL CORPS

The Georgia Tech Signal Corps used call sign 4YD during the early 1920s. Some members of the Radio Club were also members of the Signal Corps. After World War I the Reserve Officer Training Corps was very active in major universities around the country.

Realizing the important fact that the college man is the nation's best military asset and that in the many schools and universities throughout the United States are to be found real leaders of men, our government instituted the Reserve Officers' Training Corps in the majority of the leading colleges within the nation, whereby these leaders may become well versed in the customs and practices of modern warfare. Hence, in case a national emergency might arise, the War Department will have at its command, a reserve corps of trained officers, mentally, morally, and physically qualified to command troops and perform the various duties of staff (Blueprint, 1924).

The military was well aware of the importance of communication and they made sure a sufficient number of men were trained in wireless communication. The Georgia Tech Signal Corps was very active and performed field training as shown in Figure 2-6.

The Signal Corps and Radio Club were very close during the early 1920s.

The station, whose call letter is 4YA, is under the supervision of Captain Autrey of the Signal Corps. Professor Petzing of the EE Department and L.K. Rush, a student, have been assisting him in the operation and management of the unit (Radio Station Will Send Your Messages For Free, 1923).

4YD (Georgia Tech Signal Corps) and 4KM (L.K. Rush's personal call) (Citizens Radio Callbook - Fall, 1924) are also used from the station (Radio Station Will Send Your Messages For Free, 1923). All of these calls are visible in the shack photo in Figure 2-5.



Figure 2-6 - Unidentified members of the Georgia Tech Signal Corps operate a portable field radio set (Signal Corps at Work, 1921).

DANCE BY RADIO

It was a cool Saturday morning, March 27, 1920, and the Georgia Tech Band assembled on the roof of the power house near where the Radio Club shack was located. Signal Corps radio equipment

was set up outside and the band gathered around the microphone. Band leader Frank “Wop” Roman got the attention of the 40-person band with a stern rap of his baton.¹

“Boys,” commanded Wop, “I want-cha’ to play louder than you ever have before.”

At the same time, just under one mile away on the roof of the downtown Capital City Club, the assembled crowd of around 200 began to quiet. Georgia Tech Business Administration Sophomore Arthur Murray had organized a dance. The dance was not to live music as was customary during this time, but to music broadcast from the band on the Georgia Tech campus. Reporters and newsreel cameramen had arrived to record the event – the first ever dance with music broadcast by radio (Fleming, 1960). Figure 2-7 shows pictures of the band and the dancers.

The male dancers consisted of Georgia Tech students and the female dancers were mostly dance students of Arthur Murray. Murray taught dancing on the side while going to school, earning up to \$15,000/year with this side job (Goettling, 2007)!²

Signal Corps members assembled a radio receiver and loud speaker on the Capital City Club roof preparing to receive the music transmission but they ran into a problem. They could not get enough audio out of the speaker to fill the outdoor area and overcome the noise of the dancers. As a backup, Godfrey hired two musicians to be on site in case the radio system failed to work (Large Crowd Dances to Wireless Music, 1920).

Anticipating a problem, the Signal Corps members brought multiple sets of headphones and outfitted the dancers with them. Wires were running from the dancers to the receiver. With the headphones the dancers could hear the music all over the floor.

At the prescribed time of 11 AM³, the band started playing and the tune of the “Ramblin’ Wreck” could be heard by the dancers in their headphones. They continued with renditions of “Up with the White and Gold” and “It’s 3 o’clock in the Morning”. It must have been an odd site for the spectators without headphones to see dancing without audible music.

¹ Frank Roman composed the current arrangement of “Ramblin’ Wreck” that is in use today (Georgia Tech Traditions, 2017). He is also credited with “Up with the White and Gold” and the Alma Mater.

² Arthur Murray would go on to create a successful dance studio chain that is still in business teaching ballroom dancing (Arthur Murray Dance Centers, 2017).

³ The dance was held during the day to provide enough light for the media photographers and newsreel cameras.

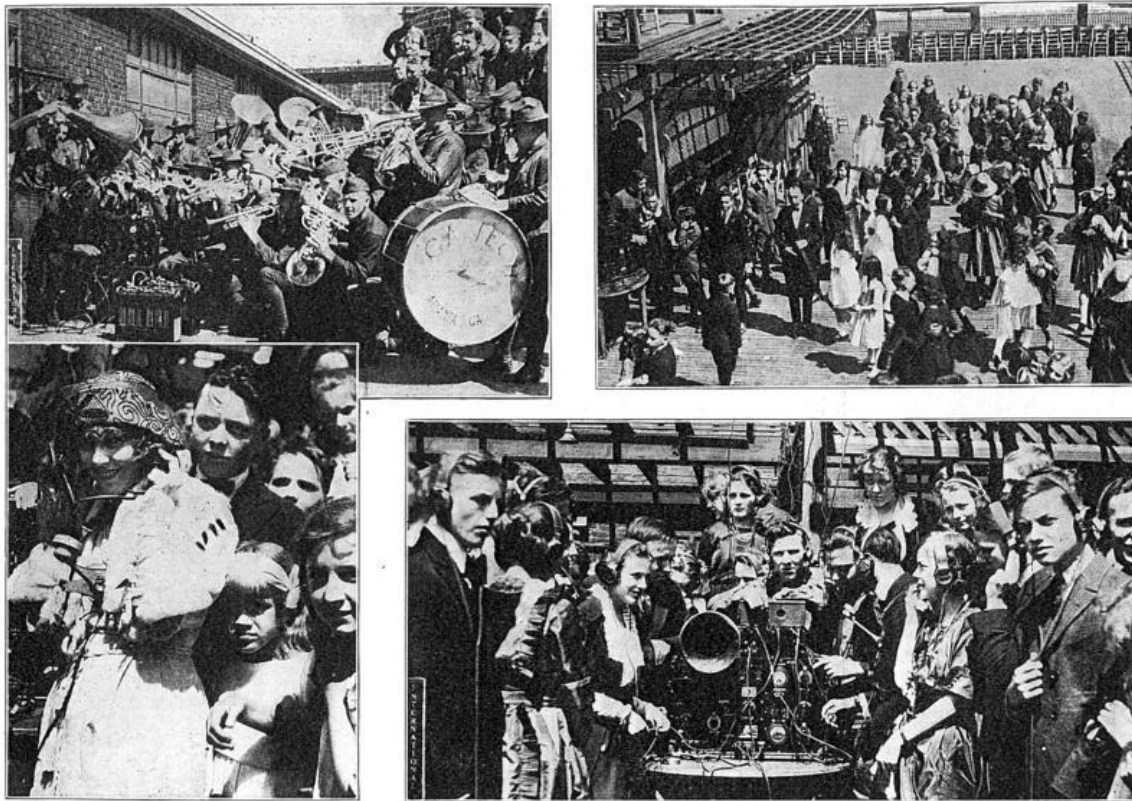


Figure 2-7 - Clockwise, starting from upper left, the Georgia Tech Band assembles on the roof of the Powerhouse building outside the radio club's shack; dancers on the roof of the Capital City Club 1 mile away with receiving set at the left; dancers listening to the music on headphones; actress June Caprice telephones the bandmaster for an encore (Telephone Engineer, 1920)

REORGANIZATION

Around the late 1924-1925 timeframe a reorganization of the club occurred. Ham radio operator Tom Edwards mentions when he started Tech in the fall of 1924 there was no radio club on campus. (Edwards, 2004) According to the December 4, 1925 edition of the Technique, "The club was organized last year with the principal purpose of getting an A.R.R.L. station here at Tech" (Radio News, 1925). This same article mentions a new call sign of the club, 4AV.



Figure 2-8 - The earliest QSL card of the Georgia Tech Radio Club known to exist. This card is dated 1926 and is acknowledging a shortwave listening report from someone in England.

A 4AV QSL card is shown in Figure 2-8. Note that the transmitter uses the popular Hartley oscillator circuit and the receiver is a Schnell Circuit with one step, or stage, of audio amplification.⁴

4AV was extremely active in message handling for students and others in the area. The club became an Official Relay Station for the ARRL (Radio News, 1927) and 275 messages were passed in one month (Radio Club Starts Operation, 1928).

Each country was using a similar method of identifying amateur radio operators which meant there may be several 4AV stations in the world. It became confusing to determine which radio station came from where. Prefixes were assigned to each country during the Washington Conference of 1927 and the United States received prefixes K, N and W (Sager, 1994). The Commerce Department decided amateur stations in the continental United States should use the W prefix and the radio club began to use W4AV (Amateur Radio Stations Callbook, 1929).

⁴ More information on the Schnell receiver can be found in QST, February 1925, page 12. Hams of this time period typically built their own equipment from parts rather than purchase a complete unit. The main reasons were cost and a lack of available manufactured radios. Since receivers were harder to build they could be purchased by more affluent hams.

Chapter 3 – Reorganization and the ‘30s

Here is a timeline of post-World War I club call signs based on information from QST, various US call books and Department of Commerce Radio Service Bulletins from 1920 to 1931:

1919-22 – 4YA
1923 – 4YA Georgia Tech and 4YD Georgia Tech Signal Corps
1924 – None. Both 4YA and 4YD were removed) (Radio Service Bulletin No. 79, 1923)
1925-27– 4AV
1928-29 – W4AV
1930 – W4YA
1931 to present – W4AQL

Why did the call signs of the club change so often during the 1920s? A history of the club published in 1949 states the club “has had one of the stormiest histories of any organization on campus” (Georgia Tech Radio Club Has Weathered Years of Difficulty, 1949).

“Because of adverse conditions”, the article continues, “a great deal was not accomplished and the club’s license lapsed. In 1932, the club was re-organized and issued its present call, W4AQL.”

Whatever the reasons for the change in calls, by 1931 the club received its now famous call sign of W4AQL (Amateur Radio Stations of the United States, 1931).

During this time the club found a home in the basement of the YMCA building which was located across from the Administration building on North Avenue (Transmitter is Built By Radio Club, 1936).⁵

The club’s transmitter was originally 250 watts input increasing to 400 watts by 1937 with a new super-heterodyne receiver as shown in Figure 3-1.⁶

⁵ The YMCA building is now the home of the Georgia Tech Alumni Association It is located at 190 North Avenue, Atlanta, GA. Refer to Georgia Tech Radio Club Locations (1931-1941) <http://goo.gl/maps/YD1zz>

⁶ Receivers in this time period were usually direct conversion regenerative due to their simple construction and good performance but they were hard to tune. Super-heterodyne receivers had improved performance since filters for them were easier to build and use to reduce adjacent frequency interference and tuning was not as finicky.



Members Operating Amateur Station W4AQL.

*Figure 3-1 - Shack of the Georgia Tech Radio Club located in the basement of the YMCA
. (Blueprint, 1938)*

By 1937 Radio Club meetings were held in Room 103 of the Physics building. The members didn't just sit around to discuss business. Tours of local radio stations, including local clear channel WSB, was a part of the activities members enjoyed (Jacket Radio Club Operates 300 Watt Transmitter in 'Y', 1937).

The QSL card shown in Figure 3-2 shows that the receiver is a Hallicrafters Super Skyrider with a transmitter capable of 400 watts input.

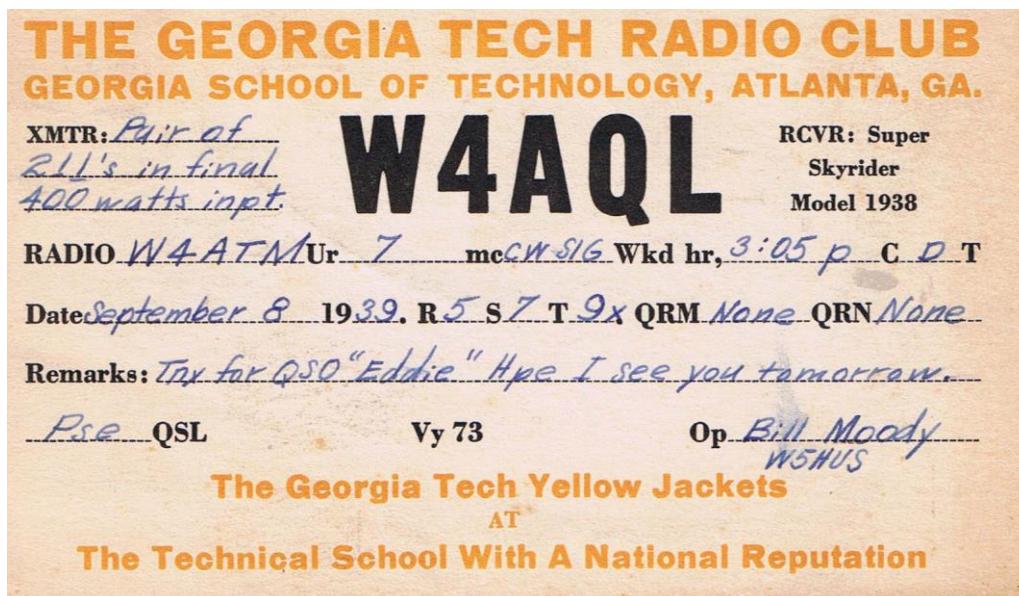


Figure 3-2 – A W4AQL QSL card from 1939.

By the winter quarter of 1940 the club had upgraded to a Hallicrafters Super-Pro receiver and four transmitters covering the 10, 20, 40 and 80 meter bands on CW. They also operated phone on 10, 20 and 75 meters (Radio Club Given New Receiver Set By Student Council, 1940).

By 1940 war was on the horizon and the country sensed it. Many Tech students were a part of the ROTC and a whole section (29 pages) of the 1941 Blueprint was dedicated to the different battalions in the ROTC (Blueprint, 1941).

War finally arrived on December 7, 1941. With war came the order to cease amateur radio operations. But with one of the premier stations in the region, the Georgia Tech Radio Club became a net control station at the request of the State Defense Corps. The station was available 24 hours a day and was tasked with the responsibility of coordinating communication via key areas in Atlanta and Georgia (Radio Station Made Key Control Spot For Defense Communication Network, 1941).

Chapter 4 – Post-War Activity

The Radio Club's State Defense responsibilities did not last long and the equipment was soon dismantled and stored in the powerhouse until the war was over. In 1944, a welder's torch accidentally set fire to the storage room destroying the club's records. Most of the equipment was badly damaged. Two receivers and some smaller items were all that was salvaged.

This unfortunate event, along with a lack of funds and a shack, made the club's revival by six students in March 1946 difficult. But by the fall they were able to acquire a room in the southeast corner of Grant Field. (Georgia Tech Radio Club Has Weathered Years of Difficulty, 1949)

A NEW HOME

The new shack was hardly luxurious. According to *The Technique*, "The roof leaked, the walls were dirty, most of the windows were broken, there were no heating facilities, and the location was inconvenient" (Georgia Tech Radio Club Has Weathered Years of Difficulty, 1949).

The poor conditions didn't help membership. The number of students in the club went from 78 to less than 30 by the fall of 1947.



Figure 4-1 – This photo was given to W2MEW by a radio club member that was leaving school. It is a picture of the West Stands of Grant Field taken from the north. The storage room with the radio equipment was located at the top of the north end of the west stands. This photo was taken soon after the 1947 West Stands renovation (photo courtesy W1MEW).

George Kardasen, then W2MEW, arrived at Georgia Tech in 1946 to go to graduate school on the G.I. Bill after his service in World War 2. Looking for the radio club he eventually met a club member that was getting ready to leave school. Kardasen was led to a storage room located in the top of the West Stands of Grant Field as shown in Figure 4-1. The equipment had been moved to this room. According to Kardasen, "Old radio equipment was laying all over the floor. It was a mess." (Kardasen, 2015)

Salvation arrived in the spring of 1948. The club's trustee, Dr. Gerald A. Rosselot, was able to coordinate the club's exclusive use of some Army-surplus facilities. The location of this "hut", shown in Figure 4-2 and Figure 4-3, was behind the Research building which is now the Hinman Building.



Figure 4-2 – The new shack is placed into position behind the Hinman Building at the right. The old Civil Engineering Building can be seen at the upper left. An unknown club member is standing at the entrance of the shack (photo courtesy W1MEW).

Kardasen remembers that the equipment in this shack was a military BC-610 transmitter and a military receiver, possibly a BC-312. A vertical antenna that was used with the station can be seen in Figure 4-2.

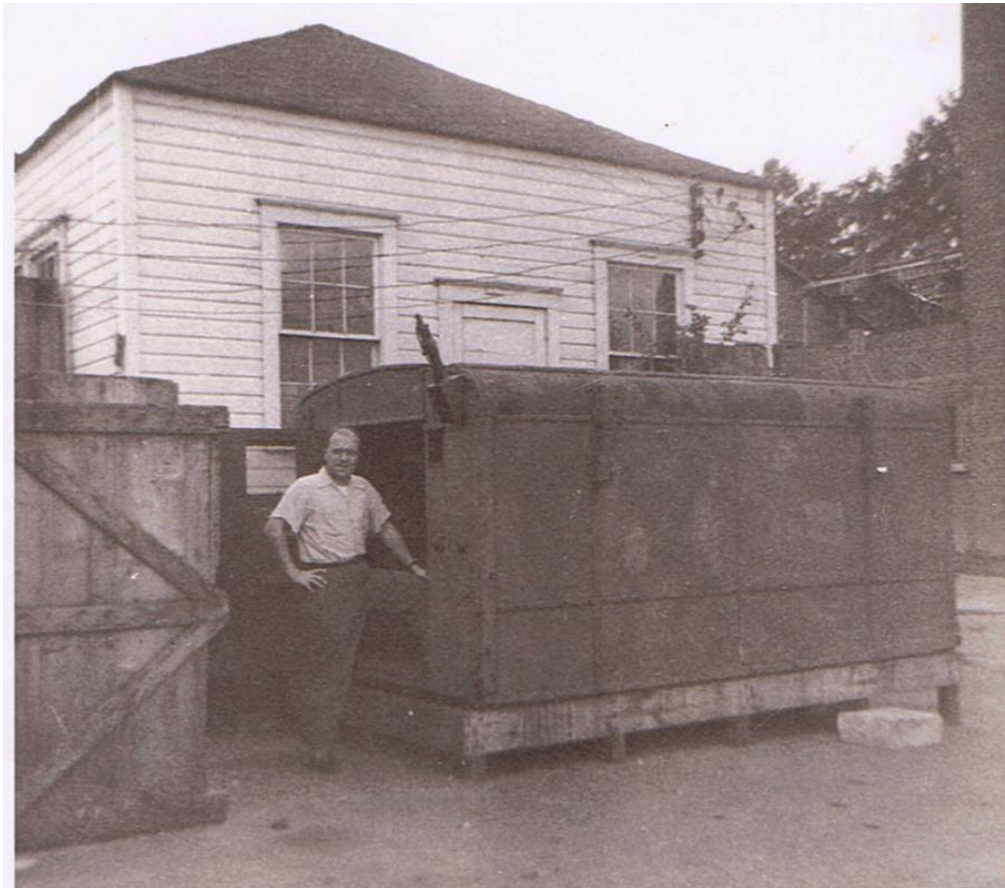


Figure 4-3 - W₂MEW stands at the entrance to the "new" shack which was an army surplus communications trailer (photo courtesy of W₁MEW).

This new shack was an improvement over the old room in Grant Field but it still needed some remodeling. The Student Council approved funds to cover the work that was performed by the Buildings and Grounds Department. The Department installed a new door and ceiling. Fresh paint was applied to the walls. The club members built new tables and work benches for the equipment. Operating positions can be seen in Figure 4-4.



Figure 4-4 - From L-R: Club Presidents F.W. Martin (Blueprint, 1950) and R.C. Carter (Blueprint, 1949) in the club shack.

Approval for the funds was helped by the service provided by the club during Engineer's Day in 1948 when "the club handled 209 messages to all parts of the US and two foreign countries"

THE SHACK MOVES AGAIN

W4AQL made another move in 1954 – this time to the penthouse of the D.M Smith Physics building (Blueprint, 1954). This location was one of the highest points on campus and allowed for better antenna installations. Figure 4-5 shows a picture of the shack in the Physics building with club president James Elliott.



Figure 4-5 - Club president James Elliott shows off some of the equipment in the shack in 1954. The receiver on top is a Hammarlund HQ-129X. Below the receiver is the BC-610 transmitter (Blueprint, 1954).

The shack was accessed by going to the top floor of the D.M Smith building and approaching a door with W₄AQL on it. Once opened, you immediately faced a ladder which had to be climbed to get to the shack.

The old army BC-610 transmitter continued to be used at this new location. It ran 600 watts on CW and AM but it was primarily used on AM (Fay, 2013). Another transmitter used was a Johnson Viking 2. Receivers were manufactured by Hammarlund. A Rohn 25 tower was precariously mounted on the roof with a 20M Yagi antenna. Dipoles were also strung from the roof for other bands. A fluorescent light bulb was attached next to the Yagi antenna so when the transmitter was on the radio energy lit up the light bulb. With the bulb at such a high location everyone on campus could tell when W₄AQL was on the air (Titus, 2013).

Chapter 5 – A New Era Begins

With the launch of Sputnik in 1957, the United States undertook a massive campaign to improve math and science education. This coincided with new Georgia Tech president Edwin D. Harrison's first president's report, "Technological Education and the Future." The report laid out a new emphasis on the "fundamentals of science and mathematics and less on outmoded, traditional courses." The goal was to prepare a new type of scientist or engineer able to adapt to new concepts and fields as they are developed but possess "enough so-called 'practical' knowledge that, with a reasonable period of orientation, he is able to serve capably at the operating level" (Harrison, 1958, p. 8).

To support the Harrison report and the country's obsession to catch up to the Russian's space program, Georgia Tech experienced its largest expansion in its history (Harrison, 1958, p. 15). New laboratories and annexes were built for Civil, Mechanical and Aeronautical Engineering. The new Skiles classroom building was completed in 1959. And, in 1962, a new Electrical Engineering building was completed.

The Van Leer Electrical Engineering Building is named after Colonel Blake R. Van Leer, president of Georgia Tech from 1944 until his death in 1956. At its opening it was a state of the art facility with enough classrooms, laboratories and office space to support the coming technological revolution brought on by the space race. The building was ingeniously designed with trays under each floor and conduits that allowed telecommunication cables to be run between classrooms and offices to support technologies that had yet to be invented.

THE SIXTIES

The Radio Club was fortunate to be able to move its shack into the new Electrical Engineering (EE) building soon after it was opened. Room E-180 would be home to W₄AQL for over three decades.

Although E-180 was a very nice and desirable office, it was not without its issues as a shack. The major problem was being located on the first floor of the building. Coax cable for antennas had to be run in the building's conduits for five floors before reaching the roof and then up a tower to the antenna. The line losses for higher frequencies, especially satellite and VHF operation, were very high.

On the roof of the building a 50' Rohn 25G tower was installed with a tri-band antenna. It can be seen from a photograph of the Atlanta skyline, shown in Figure 5-1, taken from the Physics building in the fall of 1967.



Figure 5-1 - View of the Electrical Engineering building from the roof of the Physics Building in the Fall of 1967. The arrow shows where the tower with a tri-band antenna and above it an unidentified antenna (Thomas, 2014).

From 1966-1968, Richard Crouch, WA4END (now N6RC), was President of the Radio Club. In September 1966 he attended a conference organized by Associate Dean Eugene Nichols in Callaway Gardens for the sole purpose of finding ways to improve the communication between the Institute and the students. During lunch Crouch was called over to Dean Nichols' table and he said "I understand you are President of W4AQL. We are trying to figure out what to do about WGST's zero involvement with students. Can you help us?"

A seed was planted in Crouch's head and he decided to make it happen. Donations were solicited for equipment and FCC licensing secured. Crouch convinced the student counsel and the Dean's office to allocate student activity fees to WREK. The Physical Plant built out the studio in the penthouse of the EE Building. In April 1968 WREK-FM went on the air with 10 watts of power. Initially, pop music was played during that first quarter of operation but the station eventually morphed into alternative music. The station broadcasted from various Tech events and included newscasts. They had a full 24 hours of programming (Crouch, 2014).

THE SEVENTIES

The shack improved its rigs with top-of-the-line Drake equipment. The R4B and T4XB with accessories were considered to be among the best pieces of amateur equipment available for the contester and DXer. Combined with a Collins KWM-2 transceiver and Henry amplifier the station was well equipped with high-end radios from the top amateur manufacturers of the era.

The club also assembled a 2 meter VHF repeater system with the antenna on the roof of the EE building and was on the air by 1974 (Meeting Minutes, 1974). The call sign of this repeater was WR4ARF.⁷

WREK continued to transmit from the EE building in the seventies and the studio was very close to the Radio Club's antennas. W4AQL was constantly interfering with WREK's transmission with the squawks of Single Sideband (SSB) voice transmissions in the WREK audio. The interference was especially bad when the club operated high power during contests and DXing (Wilkins, 1976). The club would continue to interfere with WREK until the summer of 1977 when WREK moved its studios out of the EE building.

The club worked many contests and was very active in the Sweepstakes contest and also participated in the CQ WW DX contest. In 1976 a challenge from the Penn State Radio Club, K3CR, was issued to W4AQL for the Sweepstakes Phone contest.

Both clubs unleashed secret weapons to win the challenge. Penn State erected wire beam antennas for 40 and 80 meters. Members of the Tech radio club wrote a computer logging program using the school's mainframe Cyber 74 computer. A video terminal was borrowed from a professor to access the mainframe. Stan Corbin, WA3WAD, Holt Mebane, WB4DNB, Rob Pauley, WB8PKV, and Bill Conwell, WB2APO, wrote and tested the computer program. Some of the features were logging the contact, alert if a contact was a duplicate, list needed sections and calculate total operating time. The only issue was interference from the transmitters that led to the club scrapping the computer for paper logs toward the end of the phone weekend (Results from Sweepstakes Challenge, 1976).⁸

The final results had W4AQL in third place nationally among college radio clubs with a score of 257,082. Penn State came in fifth with 229,240. Stanford's W6YX was first with a score of 305,864 (Jim Cain, 1977).

RESCUE AT SEA

Christoph Janker, a 17 year old German exchange student was tuning the rig in the club shack at 4:20 AM Sunday morning, during the Summer Quarter of 1977 when suddenly he came upon a signal.

"This is HP 3422 requesting assistance in an emergency."

Janker was the first person to respond to Captain Wolf Jasper's call for help. His ship, the Rhinoceros, was just off the Jamaican coast where it developed a leak and the pumps couldn't handle the amount of water flowing into his ship. Janker called the FCC who got in touch with the US Coast Guard station in Miami. The Coast Guard called Janker via telephone and he began relaying messages from the ship.

Unfortunately, the Rhinoceros didn't have any life rafts so the crew started using makeshift rafts with bits of lumber until an Air Force C130 found the survivors and dropped proper life rafts to

⁷ When the FCC first allowed amateur repeaters they were assigned a special WR callsign just for repeaters. Today, special repeater callsigns are not issued. The repeater trustee's callsign is used. The current callsign of the Georgia Tech Amateur Radio Club repeater is W4AQL.

⁸ See the Appendix for an article on contesting before computers.

them. After six hours all 11 crewmen from the Rhinoceros were brought aboard a Marine Corps vessel ('Ham' Operator Saves Ship, 1977).



Figure 5-2 - Club QSL card used in the 1970s and 1980s.

THE EIGHTIES

Early in 1979 club member Jim Nail, WA2MBP, made a formal proposal to the club to purchase a new main HF radio. He proposed that if the club sold the Drake Line, combined with the recent sale of some donated equipment, a new modern synthesized radio could be purchased (Nail, 1979).

This radio, the Icom IC-701, had many advantages.

- All solid-state electronics eliminating vacuum tubes which had to be warmed up and prone to fail over time.
- Broad-banded power amplifier that did not require manual tuning.
- Digital readout of frequency was more accurate eliminating the need to calibrate frequency as done with the old rigs.
- Minimal number of knobs.

Overall it seemed like the perfect rig for a club with a lot of different members to operate. The Drake and Collins radios were the best that could be had 15 years ago but they were showing their age with club use and a simpler to operate radio meant less mistakes made by members.

The proposal passed and the rig was ordered. The 1980s would start with a new, modern microprocessor based radio as the focal point of W4AQL.



Figure 5-3 - Club station in room E-180 as it looked in 1983.

The club station in the early 80s is shown in Figure 5-3. The Icom IC-701 is shown in the lower middle. To its left is a HAL radio teletype machine used mainly for RTTY but is capable of other digital modes. To the right is the Alpha 374A amplifier whose main feature is a broadband mode that didn't require tuning but operated at a lower power output. The amp needed to be manually tuned for higher power. Above the amplifier is a rack of equipment including a 12 volt and variable power supply to power station accessories. There are also switches and relays for station accessories included in the rack. To the left above the IC-701 is the Icom IC-251A 2 meter all mode transceiver. Most of the time this radio monitored the club's repeater but it was also used for satellite work. To the left of the IC-251A radio is the Commodore PET personal computer that controls the club's satellite antenna system.

The satellite control system was developed by club member Chris Lott, WD4OLP (Lott, 1984). It was used to control the club's satellite antenna system as the amateur satellites passed over the station. These satellites were in a low orbit and traveled very fast across the sky. Allowing the computer to control the antennas freed the operator to concentrate on operating the radio and adjusting its frequency for Doppler shifts. Specific data defining the orbit of each satellite, called Keplerian Elements, had to be entered into the computer so it could calculate the location of the satellite. The PET computer had a built-in monitor and keyboard but the keyboard was nearly useless so an external keyboard was connected for use. The tracking program had to be loaded from a cassette tape which took nearly 20 minutes to load!

The PET was not a reliable computer and it needed constant repair. Fortunately there were some spare computers used as parts to keep the main computer up and running. Soon, those computers were exhausted of spare parts and the PET was replaced with a Commodore C-64 with a disk drive that allowed for fast program loads and a better monitor.

In the fall of '82 the club's 2 meter repeater antenna was upgraded to a commercial quality antenna and new hardline coax that would improve performance in the city of Atlanta. Repeater manager Bill Pence, WB4AYP, was in charge of the installation and several club members were there to help. They realized they didn't have a rope to pull the antenna up the 90 foot tower on top of the EE

building. A weathered rope was found on the roof and after a couple of tugs, Pence declared it good. The antenna was tied to the other end of the rope and it began its journey up the tower with the ground crew standing far away. When the antenna was about halfway up the rope snapped and down it came like a missile. It hit into the tar based roof, stood up for a few seconds and then slowly fell over. Miraculously, the antenna survived the fall with no major damage. A club member procured a new rope from a local hardware store and the antenna was installed on the tower without any more issues. After rains, the office below where the antenna hit the roof was checked to confirm no leaks developed from the fall (Banks, Georgia Tech Amateur Radio Club Timeline, 2013).

SPACE SHUTTLE

The computer controlled tracking system was used with great success in the club's activity with the first two ham radio operations from space. On November 28, 1983 Owen Garriott, W5LFL, performed the first amateur radio operation from space while in orbit on the space shuttle Columbia STS-9 using a modified Motorola portable radio and an antenna mounted to the porthole. Figure 5-4 shows Garriott's operating position on the shuttle. His operation lasted 10 days and according to QST the club station's transmissions was received but a QSO was not actually made. When Garriott was performing his official duties on the space shuttle he would sometimes leave the radio on with a tape recorder so most likely W4AQL made it on the tape during this time (Well Done, W5LFL, 1984).



Figure 5-4 - QSL card signed by W5LFL and STS-9 mission commander and Georgia Tech graduate John Young (AE '52.) The original QSL card has been placed in a time capsule that is currently in the Student Center and is scheduled to be opened in 2035.

A later mission by Tony England, WØORE, was more successful for the club with a solid 2-way QSO completed on the last orbit (#99) of STS-51F directly over Atlanta on August 4, 1985. A QSL card from the contact is shown in Figure 5-5. This mission featured Slow Scan Television (SSTV) where England transmitted pictures from the space shuttle Challenger and received pictures from earthbound stations.⁹

These amateur operations are the first time ever astronauts were communicating with people on the ground without the aid of the NASA communications system.

⁹ A video of the contact can be seen at <http://youtu.be/gYGe8jil-II>.

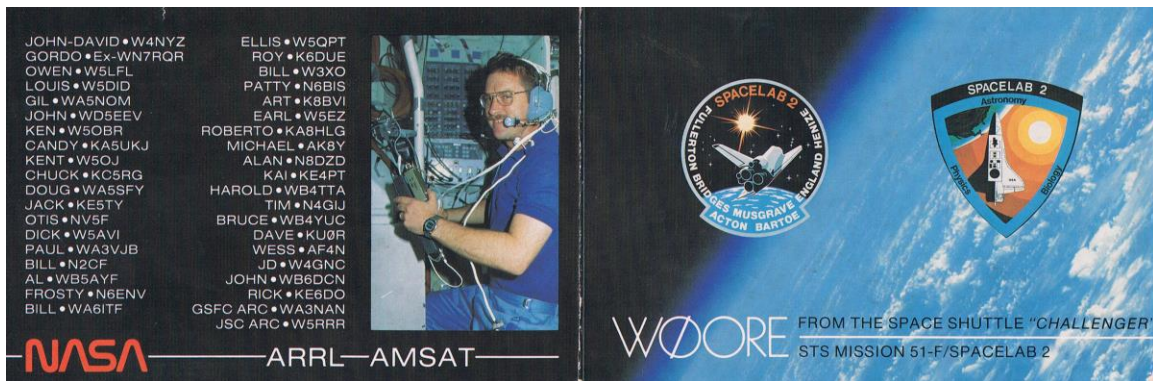


Figure 5-5 - QSL card of the WØORE contact.

The summer of '84 was unusually busy. It was during this time the club's repeater antenna was moved from the 90 foot tower on the EE building to the 300 foot WREK broadcast tower on west campus. This improved mobile coverage of the repeater from inside the I-285 perimeter to 10-20 miles outside the perimeter making it one of the best covering repeaters in Atlanta (Meeting Minutes, 1984).

In the summer of 1984 a shack cleaning took place and a lot of old, unused, and donated equipment was sold at the Atlanta Hamfest. The Icom IC-701 was also sold and with the proceeds a new Kenwood TS-930S was purchased for use as the club's main HF station.

BUDGETS

The Radio Club has been an official student organization since 1934. The Student Government Association (SGA) allowed official student organizations to apply for money from the SGA general fund which was primarily funded from student fees. Each year the Radio Club filed an application for expenses incurred in operating a college radio club and representatives from the club had to defend the application request.

Club president Sherman Banks, N4CXF, and treasurer Craig Fetner, N4JVY, attended an SGA budget defense in the Fall Quarter of 1984. They were prepared with justifications for each line item.

Phone line for Autopatch - In an era before cell phones the repeater's autopatch allowed club members on campus to make phone calls for help using handheld portable 2 meter radios.
Denied – phone lines are not purchased with student funds.

Postage and mailing expenses - The club used the newsletter to stay in touch with alumni and other college radio clubs. The club also sent regular correspondence to the ARRL and other organizations and hams off campus. The mailing of QSLs also falls under this category.
Denied – student organizations should have students as members and the club can use the campus' free mail service.

Line by line the budget was shot down. They left the meeting shocked that only the WREK maintenance was approved but only after it was argued that since the club's repeater antenna was now on the WREK tower the club now contributes to the maintenance. The total bottom line

amount for the maintenance was the same as previous years when the WREK and W₄AQL contributions were combined.

Chapter 6 - Earthquake!

It's Thursday September 19, 1985 and club president Banks hung up the shack phone after a call from a local TV news station. Just notified by the station of a major earthquake in Mexico City, he engaged in a QSO with the Mexican station providing an excellent description of the conditions in Mexico City after the magnitude 8.1 earthquake. It didn't take long before the TV crew arrived, shot some film of the club station and audio descriptions of the event and then left in time to make the evening news. Another news station called and inquired about 200 people from Atlanta in Acapulco for a convention. The club was able to ascertain there was little damage and no casualties (Riley & Ewald, 1985).

According to the ham radio operator in Mexico City, local phone service was up and running. The problem was the long distance service was out. The satellite dishes used for long distance were either damaged or kept getting out of alignment from the constant stream of after-shocks.

Once the live report performed from the club shack aired on the 11 PM news announcing the club's ability to receive word on the conventioners the shack phone didn't stop ringing as people desperate to find out about their loved ones in the affected areas called. Names of the caller, person to contact in the area and phone numbers were written down. Callers were then told they would be notified once news was received from Mexico City. Figure 6-1 shows how the shack looked during this operating event.



Figure 6-1 - N4CXF sits at the club's main operating position during the Mexico City Earthquake (Blueprint, 1986).

At first club members were reluctant to send messages into the area. Priority was given to messages leaving Mexico City. The club's contact in Mexico City, Pedro, XE1HHA, agreed to start receiving

health and welfare messages and club operators started sending him simply the names and local phone numbers to keep things moving as quickly as possible. Soon he responded with OK, NO ANSWER or OUT OF ORDER to the inquiries.

Friday was a very busy day taking phone messages and round-the-clock radio operation. The shack was crowded with media and club members to operate and support the effort. Since class was in session a schedule was setup to maintain ongoing, uninterrupted operations while not overworking any operator.

Pedro's English was good but it was slow going relaying the information he needed for his team to make the calls. Members from the Mexican Consulate arrived at the Georgia Tech club shack and watched the struggle to pass the information in English. They offered to sit at the microphone and pass the messages to Pedro in Spanish to speed up the relay. When they switched to Spanish the speed they passed messages was like a run on 20 meters during the start of the CQ World Wide DX Contest. The translators became very good radio operators after watching club members operate and with minimal instruction on radio operation.

Consulate family members brought authentic Mexican style meals which were very much appreciated as the hours of the operation passed. A Coca Cola representative called requesting information on the employees at their facility. A response was relayed back a few hours later that all of the employees were OK. That evening 10 cases of Coca Cola were delivered to the club shack.

The translators put up some Spanish words to be on the lookout for as traffic was passed. One word no one wanted to hear was *muerte* – or dead. The shack went quiet when '*muerte*' eventually came out of the radio speaker. The response was put on the message and handed to club president Banks.

"What do we do with that?" asked club treasurer and GTRI staff member John Schonk, N4JQD.

"We're not going to tell them their family member is dead", responded Banks. He crossed out dead and put in NO RESPONSE. "Let's tell them we didn't get a response from the number. We'll let the State Department confirm the death and deliver the news."

A woman called requesting the status of her daughter. Her status came back as OK but she later received word from the State Department that there was no contact. She called the club again and wanted the club to check her status a second time. Again, it came back as OK. She called a third time stating the State Department still had no word on her status.

"Ma'am, we have a lot of messages to send from people that have not even sent one message," Banks kindly told her. "We won't be asking a third time for you. I am confident that your daughter is fine."

She thanked the club for the effort and she wasn't heard from again until a copy of a letter to the President of Georgia Tech, Dr. Joseph Petit, was received by the club.

September 24, 1985

Dear Dr. Petit,

Please thank the Tech Ham Operators Club for all they have done in the Mexican earthquake crisis.

My daughter, Carol Duffey, was one of the ones they were able to get information about two times, after each quake. I can't say enough in their praise as they were really our only contact. Carol had gone to the American Embassy on Friday, but the State Dept. had no word to give us on her until Monday morning after she had arrived home Sunday afternoon.

Please give the enclosed check to the club to use as they see fit as a small token of our appreciation for all they have done.

Sincerely,

Linda Duffey

All weekend it was a non-stop effort to keep the phone answered and pass messages. By Monday the phone still rang but mainly from people who did not receive a positive OK response. Most inquiries were NO ANSWER or OUT OF ORDER and the phone calls started dying down by Tuesday (Riley & Ewald, 1985).

EFFICIENT OPERATION RECEIVES NATIONAL RECOGNITION

The methods the radio club used of simply relaying the name of the person to reach and a phone number turned out to be one of the most important decisions made during the operation. The Red Cross had arrived at the shack wanting operators to utilize their own messaging form requiring a good deal of information being relayed in both directions. It would have dramatically slowed progress reducing the number of contacts being made. Callers only wanted to know the status of a loved one.

The traffic handling procedure used by the club was recognized by American Radio Relay League Executive Vice President Dave Sumner, K1ZZ.

...by and large it was not prior planning and organization that carried the day. Rather, it was that most American of traits, ad hoc individual initiative. Sole reliance on established procedures, designed for a different scenario, would have left thousands of people un-necessarily frustrated in their quest for reassuring news (Sumner, 1985).

BUDGET – ROUND 2

Still stinging from the previous year's budget defense, the 1985 budget application was submitted to the SGA that included mailings, an insurance premium and some needed maintenance to the equipment. Fortunately the budget defense occurred shortly after the Earthquake operation and the number of messages to pass dwindled. Banks and Fetner entered the meeting fully expecting to be shot down again.

The committee chairman opened with a statement, "The SGA recognizes the wonderful publicity the Radio Club has generated for Georgia Tech and the SGA in the communications work performed in the aftermath of the earthquake in Mexico City." Nods and smiles came from the committee members. The chairman continued, "No student organization on campus has had such a positive effect for people throughout the country who benefited from your services. Are you sure that your budget request is sufficient to meet your needs for the coming year?"

Banks and Fetner looked at each other with shock. This was definitely not how they thought the meeting would turn out.

The club continues to benefit from the service performed from September 19-24, 1985.

Chapter 7 – Growth and Stability

The club shack in room E-180 occupied valuable office space in the EE building. By the late 1980s the building had begun to get crowded. Office space was at a premium and the club shack was a constant target of professors who wanted the space as an office. Fortunately, the publicity the club received from the Mexico City Earthquake afforded some protection at the highest levels of the administration. In response to a memo from club trustee Dr. Paul Steffes, W8ZI, on the club's health and welfare activities, the following response was received.

October 1, 1985

Dear Professor Steffes:

I agree wholeheartedly. Please commend the officers and members of the Georgia Tech Amateur Radio Club for their service during the Mexico City earthquake. As a former radio ham—and one who went through an earthquake in California—I appreciate the importance of this service.

Sincerely,

J.M. Pettit

President

On December 23, 1986, the Radio Club's most loyal supporter passed away. Hazard "Buz" Reeves, (1906-1986), 4RZ and later W2HJR and K2GL, was the Vice President of the Georgia Tech Radio Club when he was a senior in 1927-28. Figure 7-1 shows Buz as a senior at Georgia Tech. He was also president of the Oil Can Club, an Honorary Mechanical organization (Blueprint, 1928).

Graduating with a degree in Mechanical Engineering in 1928, his career led him to audio engineering, first with the Columbia Phonograph Company and later as a special consultant with Harvard University Film Foundation. He started Reeves Sound Studios in 1933. This led to the Reeves Soundcraft Corporation that developed the process for applying magnetic oxide to motion picture film for stereophonic audio. Reeves Soundcraft was awarded an Oscar for this invention in 1954 (Hazard Reeves, 2002).

An avid amateur radio operator, he built a large multi-transmitter contest superstation at his home in Tuxedo Park, NY (Figure 7-2) that operated contests under the call sign N2AA. Throughout his life he donated his old station equipment to the Georgia Tech Radio Club.

Upon his death in 1986 he left his entire ham radio station to the club. Club members flew up to New York, loaded the equipment in a large moving van and drove it back to Atlanta (Figure 7-3 and Figure 7-4.) Some were kept to upgrade the station but most of it was sold and the proceeds put in an account with the Georgia Tech Foundation as an endowment. Interest from the endowment is provided to the club annually as a supplemental income so the club need not worry about a lack of funds from SGA or dips in membership dues. The equipment left to the club provided an upgrade to the station and financial stability for the future.

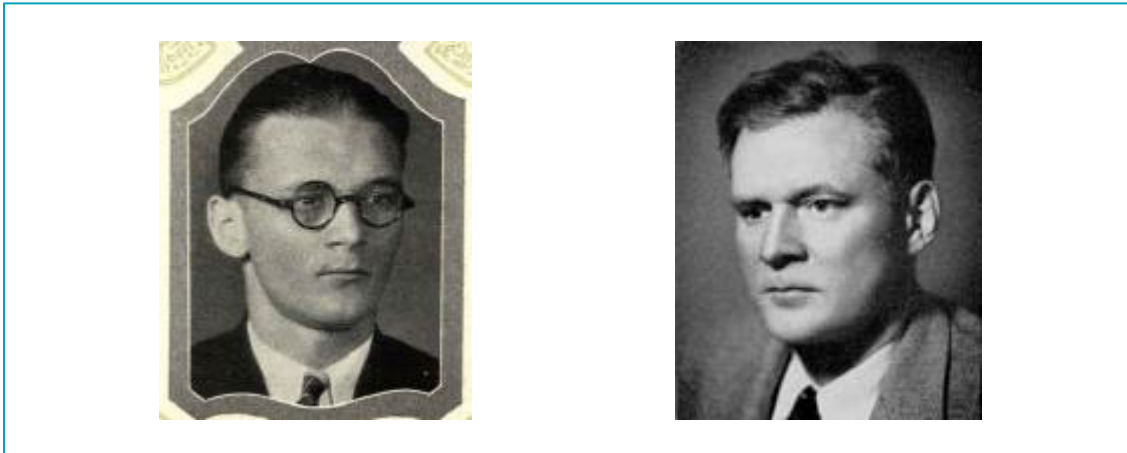


Figure 7-1 – From L-R: Hazard "Buz" as a senior at Georgia Tech in 1928 (Blueprint, 1928) and as a pioneer of Cinerama in 1952 (Hazard Reeves, 2002).



Figure 7-2 - Hazard "Buz" Reeves' house in Tuxedo Park with his vast array of antennas.



Figure 7-3 - Buz Reeves' shack is packed for shipment to W₄AQL. Here are three of the Kenwood TS-940S HF radios used at K₂GL. The club kept two but sold the rest. To the right is an older Drake TR-7 transceiver that was used before the Kenwood radios were purchased.



Figure 7-4 - Radio equipment at K₂GL is stacked up just before loading onto the truck that would be driven to Atlanta by Sandy Donahue, WA₄ABY/W₄RU(SK.) Four Alpha 77D amplifiers can be seen here.

HURRICANE HUGO

Hurricane Hugo hit landfall at Charleston, SC September 21, 1989. Hugo caused \$7B in damage and left thousands homeless (Blake & Landsea, 2011). The club kicked back into emergency mode and provided communications to the area. Club Vice President Dave Huggins, N4RMM, “flew to St. Croix, US Virgin Islands with radio equipment and spent five days sending messages to the US mainland until local phone and electrical systems were restored” (Blueprint, 1990). The radio club provided information on family members in the Caribbean from all over the country. Over twenty club members spent several sleepless nights in the club shack. Local TV stations made live broadcasts from the club station and the Institute received international coverage on CNN.¹⁰

THE NINETIES

The club has always been active in contesting throughout the years. The club was #1 in the division three times in the 70s (combined CW & SSB) and three times in the 80s (SSB.) But contest activity really cranked up in the 90s. Led by David Kunkee, KØDI, and Jeff Tucker, N9HZQ, the club led the SE Division six times, culminating in a collegiate national championship in 1994. The increase in performance was due to a combination of station improvements and excellent operating.

The club’s main HF stations were upgraded to high performance Yaesu FT-1000MP radios which, at the time, were the radio of choice for competitive amateur radio stations. Antennas were installed for 50 MHz through 432 MHz weak signal VHF work on the 90 foot tower. A broadbanded “cage” dipole was installed on the 90 foot tower for 80 meters and a 2 element 40 meter beam installed above the TH6DXX on the 50 foot tower.

A long standing problem with high coax cable losses due to the extreme distance from the roof to the first floor of the EE building was solved in the fall of 1999. After calling E-180 home for over three decades the club moved to room 560 on the fifth floor (Figure 7-5). This room provided an excellent view of the Atlanta skyline and significantly shortened the coax to the antennas.

¹⁰ News video from WXIA-TV of the club’s Hugo relief operation can be seen at <https://youtu.be/zR3sd6OduEo>.

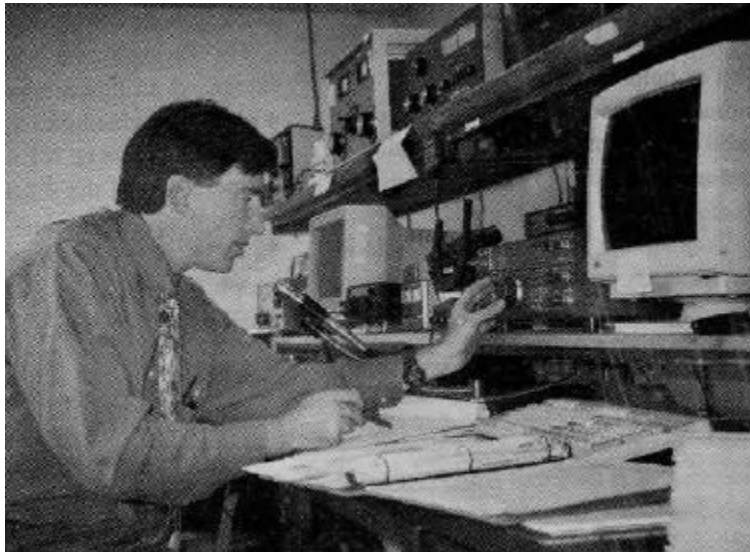


Figure 7-5 - Club faculty advisor Dr. Paul Steffes, W8ZI, at the main operating position of W4AQL monitoring the Hurricane Watch Net during Hurricane Floyd in 1999 (Tuning in to Hurricane Floyd, 1999).

A NEW MILLENIUM

As office and lab space needs changed, the shack made another move to E496-A in the EE building in the summer of 2007. Activity on HF is less but interest in digital communication modes is up with the acquisition of a D-STAR digital repeater system and an APRS station. A new Alpha 87A amplifier was acquired that requires no tuning for simpler, more “fool-proof” operation by new and inexperienced club members.

INTERNATIONAL SPACE STATION

Amateur radio is included on the International Space Station as a part of the Amateur Radio on the International Space Station (ARISS) program. ARISS “lets students worldwide experience the excitement of talking directly with crew members on the ISS with the goal of inspiring them to pursue careers in science, technology, engineering and math. “ (Amateur Radio on the International Space Station, 2017)

During 2005 and 2006 Georgia Tech alumnae and astronaut Bill McArthur (MSAE '83) was serving on board the ISS. He coordinated through ARISS to arrange radio contact with students in the Aeronautical Engineering (AE) department at Georgia Tech. Some of those students were on the Mars Desert Research Station (MDRS) activity where they used amateur radio to help perform their simulated Mars exploration hikes (Carver, 2017).¹¹ Those students contacted the Radio Club to make the event happen and informed ARISS that the Radio Club would be the ground station at Georgia Tech.

¹¹ MDRS is a simulated Mars environment in the Utah desert near Hanksville, UT. It is sponsored by the Mars Society, a volunteer-driven non-profit space advocacy organization. Georgia Tech Aeronautical Engineering sent a “crew” out once a year to participate.

At this time, the club's satellite station was not operational due to the move of the shack. Many weekends were spent repairing equipment and configuring tracking software to talk to the radio and the antenna rotators. Students working at WREK were contacted to assist in repairs and coordinate a live broadcast of the contact.

There were a few people with ARISS and other local amateur radio operators who were not convinced the club was capable of pulling off the contact. Some thought the club had disbanded and others thought they did not have a satellite station. Many offers were made to "take over" work as a ground station in order to insure success of the contact.

Finally the day of the contact arrived - January 19, 2006. Weather was perfect for the scheduled 10 minute flyover. AE students assembled in the shack to guest operate. Two local TV stations were on hand to cover the event. Club president Alexander Carver, KF4LVZ, manned W4AQL as control operator. As the ISS was scheduled to come over the horizon the contact started. AE students, as seen in Figure 7-6, took turns asking questions to McArthur operating NA1SS on the ISS.¹² The satellite tracking system performed flawlessly as the ISS passed overhead. The station had nearly horizon to horizon coverage. The only glitch was at the very end when someone tripped over the audio cable feeding the WREK simulcast of the contact (Radio Club Contacts International Space Station, 2006)¹³.



Figure 7-6 - Meryl Mims, KI4NYC, makes a QSO with Tech Alum Bill McArthur operating NA1SS aboard the International Space Station in 2006 (Radio Club Contacts International Space Station, 2006).

¹² Audio of the ISS contact can be found at <http://w4aql.gtorg.gatech.edu/technical/iss.mp3>

¹³ NASA astronaut candidates go through a two year training period. Part of that training includes an optional Amateur Radio licensing class. NASA is interested in promoting math and science to students and they see amateur radio as an excellent way to communicate with young people (NASA Astronauts and Astronaut Candidates Earn Amateur Radio Licenses , 2011).

ENTERING A SECOND CENTURY

As the radio club enters its second century of existence on campus it continues to be a major contributor to the Institute. The explosion of wireless and data communication has just increased interest in radio communication and students continue to seek practical information that can be gained by being active in the Radio Club.



Figure 7-7 – This picture was taken right before a club meeting in the fall of 2013 at the W4AQL shack in room E496-A of the Van Leer EE Building. Alex Davidson, W1AND, is at the main operating position.

Today club meetings are held in the club shack in room E496-A of the Van Leer EE building (Figure 7-7). A Flex 6500 Software Defined Radio replaces the 20 year old Yaesu FT-1000MP with TH7DXX tri-bander, 2 element 40 meter beam and wire antenna for 80 Meters. Satellite communication is a popular activity, especially with Aeronautical Engineering students. “Boot Camp” classes are held to learn enough to pass an amateur radio exam and obtain a license. An Automatic Packet Reporting System (APRS) station provides information and a relay point into the APRS system that provides location and other data on equipped amateur stations. The club’s repeater is used to provide communication for events in the Atlanta area. The Stinger Net that was an informal gathering on the club repeater in the middle of the night in the 80s has evolved into The Yellow Jacket Net every Tuesday at 10 PM. Occasionally, the club will sponsor a technology event that is held on the campus on advanced topics such as digital communication and software defined radios.

The club has come a long way from the early spark transmitters 100 years ago to communication with astronauts in orbit. The club has truly gone from spark to space – and beyond.

Chapter 8 - Appendix

TIMELINE

- 1907** – A wireless apparatus is mentioned as part of the equipment available in the Physics Department.
- 1912** – Seniors start studying wireless operation and assemble a station. Call sign 4XG assigned.
- 1913** – 5 KW rotary spark gap transmitter and a receiving set with several types of detectors assembled.
- 1914** – Audion detector, wave meter and 10 ampere ammeter added.
- 1916** – The wireless station moves to the power plant. The antenna is installed in between the power plant smokestack and the Tech Tower. The first mention of an Electrical Engineering course that includes radio communication is offered (EE 15 Electrical Signaling)
- 1917** – Amateur radio operation ceases during WWI. The US Army allows Georgia Tech to continue training in wireless communication to support service in the Signal Corps.
- 1918** – Course offered dedicated to radio communication in order to trainmen for service in the Radio Division of the Signal Corps.
- 1919** – Tech club back on the air after WWI using 4YA. Shack located in the Powerhouse. Radio Club membership mentioned in Blueprint senior class activities.
- 1920 March 27** – First broadcast of dance music by radio organized by sophomore and part time dance instructor Arthur Murray, ROTC Band and the Georgia Tech Signal Corps.
- 1921** – Radio station housed in a separate room on the upper portion of the power plant. The station consists of 2KW and 1KW transmitters and a “regenerative audion receiver with DeForest panels.” A Radio Engineering course (EE 24) is offered.
- 1922** – Radio Club featured in the Blueprint for the first time.
- 1923** – CW transmitter installed. Club station 4YA and club member L. K. Rush, 4KM are successfully heard in Europe during the transatlantic tests. These calls were among the first stations from the Southeastern United States to communicate wirelessly with Europe.
- 1923 January** – The Georgia Tech Signal Corps is assigned 4YD.
- 1923 November** – 4YA and 4YD are cancelled (Radio Service Bulletin No. 79).
- 1925** – Club call switches to 4AV. Shack located above the ROTC shoe shop.
- 1927** – 4AV located next to (back of the) Aviation Department/ Office and faced the southern side of the hospital.
- 1928** - Hazard “Buz” Reeves, 4RZ and later W2HJR and K2GL, graduates with a degree in Mechanical Engineering. *4RZ was active in the Georgia Tech Radio Club and served as Vice President. His degree currently hangs in the shack of W4AQL. Buz Reeves becomes a lifelong supporter and contributor to the Georgia Tech Radio Club.*

1927 - Washington Conference of 1927 assigns unique country prefixes to amateur radio stations worldwide. The United States is assigned W, K and N.

1928 -The Commerce Department orders amateurs in the continental United States to use the W prefix for amateur stations so the club changes from 4AV to W4AV.

1929 - W4YA used by the club. Shack located in the powerhouse and is equipped with a 75W transmitter.

1931 - Club is "reorganized." W4AQL assigned to the radio club. The radio club shack is moved to the basement of the YMCA building on North Avenue across from the Tech Tower Administration building. *Today the YMCA building is used by the Alumni Association.*

1934 - Recognized by the Student Council as an official student organization.

1940 - New Super Pro receiver acquired.

1941 December - W4AQL is a Key Control Spot for the Defense Communication Network. Amateur Radio ceases during WWII.

1946 March - Club re-started. Shack located in a room in the southeast corner of Grant Field.

1947 - During Engineer's Day the club handled 209 messages to all parts of the U.S. and two foreign countries.

1949 December - Club moves to a "temporary" building near the Experiment Station.

1954 - Club Shack moves to the "Penthouse" at the top of the Physics Building.

1965 - Club documentation and discussions with former club members place the shack in room E-180 of the Van Leer EE building soon after it opened.

1968 - Club President Richard Crouch WA4END (now N2RC) starts WREK.

1971 November 21 - New Drake Line equipment arrives.

1972 May 28 - Active on Georgia QSO party, Field Day and Sweepstakes contests.

1972 Field Day - July 9, 1972 minutes show a keg of beer was purchased for Field Day for the price of \$30. The generator only cost \$10.50.

1972 September - Club plans on sponsoring and installing a 2 meter repeater.

1973 - Buz Reeves K2GL donates equipment: Collins KWM-2 (qty. 2), Collins 75A-4 (qty. 3), Henry 2K (qty. 2)

1974 January - Repeater moved to the 5th floor antenna lab (Van Leer EE Building).

1974 October 20 - Drake, KWM-2, and Henry amplifier used in the shack.

1977 January 23 - Repeater Manager position created. The first Repeater Manager is Kevin Atkinson WB4RBL.

1977 Summer – WREK moves out of the EE building.

1977 September – Tech student aids in rescue of a boat in distress. Messages were relayed from the ship to the US Coast Guard.

1977 November 21 – RTTY equipment installed in the shack.

1979 January 24 – Proposal by Jim Nail, WA2MBP, to sell the Drake line (T4xB serial number 18636-B, R4B serial number 14011-B, C4, MS4) and purchase an Icom 701.

1979 May – Alpha amplifier ordered. Old WREK tower purchased by the club. New tower section installed on top of the old WREK tower.

1979 October – Club purchased a Ten Tec Omni-D for \$1177.50. It has full break-in CW, external VFO with dual receive, and built-in 10 MHz capability.

1982 December – A new dB Products repeater antenna is installed on the old WREK tower.

1983 – QSO attempt with Owen Garriott, W5LFL, on Space Shuttle Columbia STS-9. The tape recorder for the radio on the shuttle was left running in receive only mode and W4AQL was on the tape but no 2-way QSO was made.

1984 – Dr. Paul Steffes, W8ZI, becomes Faculty Advisor and Club Trustee for W4AQL succeeding Professor John Wallace.

1984 February 28 – Buz Reeves, K2GL, donated equipment including two KWM-2A transceivers and two Henry amplifiers.

1984 July 9 – Kenwood TS-930S purchased and is now used at the main HF operating position.

1984 May 18 – An agreement is made between the Radio Club and WREK to move the repeater antenna to the top of the WREK broadcast tower on west campus.

1985 April 7 – A special QSL card that was requested to be signed by Astronauts Owen Garriott and John Young from the STS-9 mission is received. The card is placed in the Centennial Time Capsule currently in the Student Center. The time capsule is scheduled to be opened in 2035.

1985 August 4 – QSO with WØORE Tony England in Space Shuttle Challenger STS-51F. SSTV transmissions are received.

1985 September – Mexico City Earthquake Health and Welfare Communications.

1986 February – Buz Reeves, K2GL, donates a Henry linear amplifier and 5 Drake TR-7 transceivers with power supplies and external VFOs.

1986 December 23 – Hazard “Buz” Reeves passes away. He bequeaths his radio equipment to the Georgia Tech Amateur Radio Club and the proceeds start an endowment that provides an annual income for the club.

1988 May – Kenwood TS-940 now used at the main HF operating position.

1989 - Hurricane Hugo health and welfare activity.

1994 - Georgia State Games communications.

1994 - November Sweepstakes Collegiate National Champions

1999 - Hurricane Floyd health and welfare communications.

1999 Fall - Shack moves from E-180 to the fifth floor of Van Leer EE Building, room 560.

2006 - QSO with International Space Station Tech Alum Bill McArthur.

2007 Summer - Shack moves from 596 to E496-A.

2017 - A Flex 6500 Software Defined Radio with Maestro console is purchased for the main operating position to replace the FT-1000MP.

2018 - W4AQL captures First Place in the inaugural North American College Championship held during the SSB January NA QSO Party with W8YZH (now KN8U) and KJ4IQA (now W4MOG) operating.

2019 - Georgia QSO Party First Place Georgia Single Op Mixed Mode High Power (KN8U Op)

2019 - Ground control station for the Lightsail 2 Cubesat satellite to test solar wind propulsion.

2020 January - W4AQL places 1st in the North American Collegiate Championship operated by KM4DE, KN8U and KJ4IQA.

2020 March - The COVID-19 worldwide pandemic causes classes to be moved on-line in order to minimize the spread of the virus between students. Club meetings, normally held in the shack are held on line. Open Shack night turns into on-line presentations on various subjects. The shack is not closed, but rules to minimize the spread of the virus are implemented for members who use the shack.

2021 January - W4AQL places 1st in the North American Collegiate Championship. In person open shack resumes with masks and social distancing. Meetings are still held on-line. Volunteer Exams are re-started in the Van Leer EE Building.

2021 Fall - Return to in-person meetings and open shack.

2021 December - Installed an Apache Anan 7000DLE MKII software defined radio at station "B" to support the Flex 6500 on station "A". It is connected to the Alpha 374A amplifier and is running Protocol 2 firmware inside the radio and Thetis software on the station B computer.

2022 February - Cubesat GT-1 successfully deployed into space. GT-1 was built by students in the Georgia Tech Space Systems Design Laboratory in partnership with the Georgia Tech Amateur Radio Club. GT-1 carried an amateur radio payload featuring a digipeater and ROBOT system using AX.25 protocol at 437.175 MHz.

QSL CARDS

1926

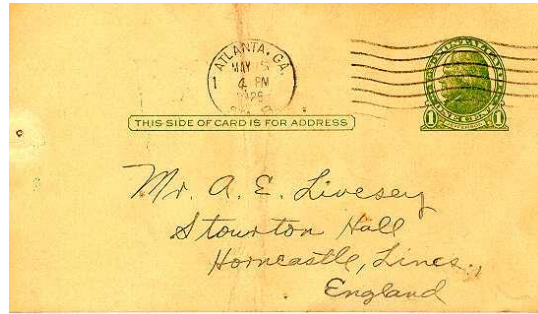
name of the yellow jackets

GEORGIA TECH RADIO CLUB Atlanta, Georgia, U.S.A.
 Radio *To Be* Ur sigs wkld M. C.S.T. 1926
 Aud _____ QSS _____

Transmitter **4AV** Receiver
 Series Hartley Schnell Circuit
 100 W. Input 1 Step Audio

Remarks: *Just gd to get ur col om. Trx vry
 U sure have heard "sum DX" Chesio ole dead. He*

~~QSL~~ Glad to QSR. 73's *Bill M. Johnson Op. DM*



1937

GEORGIA TECH RADIO CLUB
 Box 107, TREASURERS OFFICE, Georgia Tech
 103 ATLANTA, GA.

W80LH

W4AQL

UR Sigs. | Wkd. | Hr. *11:35 P.M.* C.S.T. *2-1* 1937
 QRI *9X* QSA *5* R *8*

Rev. - National Thrill Box
 Xmitter *pair 211's final - abt 400 watts*

GEORGIA SCHOOL OF TECHNOLOGY
 "A Technical School With a National Reputation"

1939

THE GEORGIA TECH RADIO CLUB
 GEORGIA SCHOOL OF TECHNOLOGY, ATLANTA, GA.

pair of 211's in final 400 watts inpt.

W4AQL RCVR: Super Skyrider Model 1938

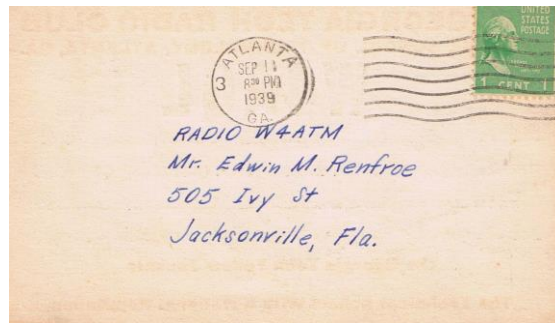
RADIO *W4ATM* Ur *7* me *cn sig* Wkd hr, *3:05 p* C. D. T

Date *September 8* 1939. R. S. T. *9x* QRM None. QRN None

Remarks: *Trx for QSO "Eddie" Hye. I see you tomorrow.*

Prv QSL Vy 73 Op *Bill Moady W5WUS*

The Georgia Tech Yellow Jackets
 AT
 The Technical School With A National Reputation



1951

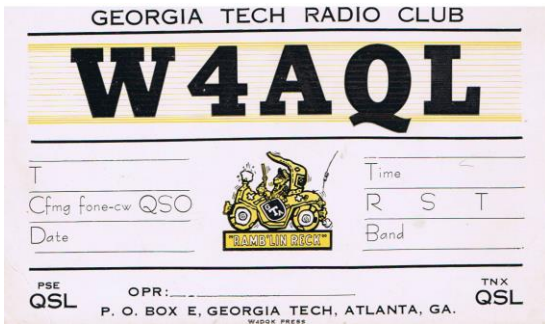
The Georgia Tech Radio Club
 Box E-Georgia Tech "RAMBLIN' WRECKS" Atlanta, Georgia

W4AQL

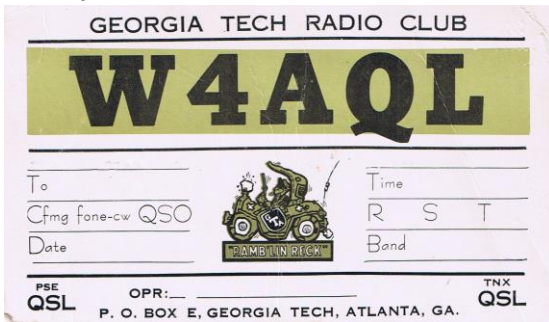
• • WAC • • WAS • • ORS • • OPS • •

To *W1BWP* thanks for *71 mc gao at 1:00 est 6-28-19* S1 rst 574
 Operator *Ernie Greenwood* Call *W5SUV*

Mid-1950s



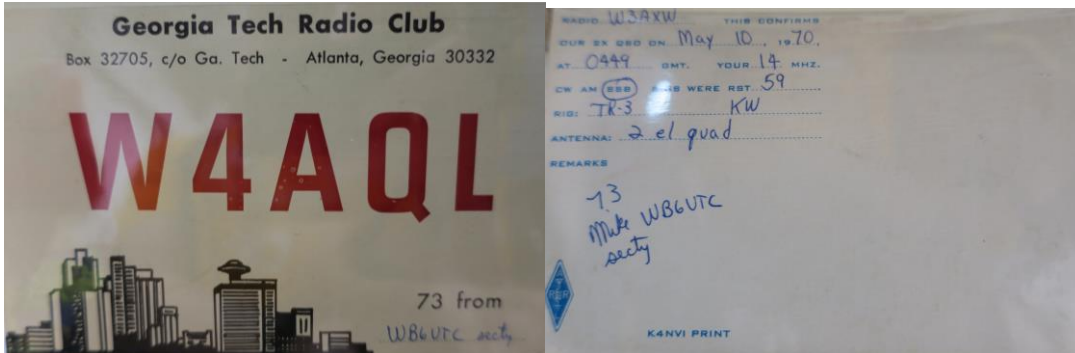
Circa 1960s



1969



1970



1976

W4AQL
 GEORGIA TECH
 RADIO CLUB
 BOX 32705
 ATLANTA, GEORGIA
 30332 U.S.A.

Club Shack Rm. E-180 E.E. Bldg.

TO RADIO STATION _____ CONFIRMING OUR QSO OF 1307# 584726, 1976

2 x CW SSB RST _____

BAND: 80 40 20 15
 10

RIG: DRAKE T4X - R4B COLLINS 30L1
 COLLINS KWM-2 HENRY 2K

Antenna: 3 ELEMENT BEAM DIPOLE

Tnx for QSO

Pse QSL
 TNX QSL 73 Pete
 (QSL M A N A G E R)

W4AQL
 Georgia Tech Radio Club
 BOX 32705
 ATLANTA, GEORGIA
 30332 - U.S.A.

TO: AMATEUR RADIO STATION _____

1979

GEORGIA TECH AMATEUR RADIO CLUB

W4AQL

P.O. Box 32705 Atlanta, Georgia 30332

Radio Station _____ Confirming our QSO of 7:30 1979

At: 3013 Freq: 21155

Rpt: TH6DX INVERTED VEE

IC-701
 Alpha 874A1
 T3S
 Rambo

PSE QSL-TNX

A.R.S. KADFPD
 Duane CARSON
 7 Sunrise Dr.
 Minnetonka
 New Ulm, Minn
 56073

Circa 1980s

W4AQL
 GEORGIA TECH
 RADIO CLUB
 BOX 32705
 ATLANTA, GEORGIA
 30332 U.S.A.

Club Shack Rm. E-180 E.E. Bldg.

TO RADIO STATION _____ CONFIRMING OUR _____ QSO OF _____ 19____

FREQUENCY: _____ REPORT: _____

RIG: _____

ANTENNA: _____

REMARKS: _____

PSE QSL 73
 TNX QSL _____

W4AQL
 Georgia Tech Radio Club
 BOX 32705
 ATLANTA, GEORGIA
 30332 - U.S.A.

TO: AMATEUR RADIO STATION _____

Circa 1990s

W4AQL
 GEORGIA TECH
 RADIO CLUB
 BOX 32705
 ATLANTA, GEORGIA
 30332 - U.S.A.

GEORGIA
 FULTON COUNTY
 GRID: EM73ts

W4AQL

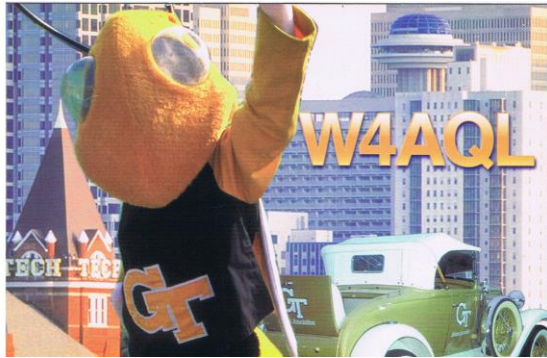
CONFIRMING QSO WITH N4CXF DAY 11 MONTH 21 YEAR 93

UTC 0458 Mhz 14 RST 59 2-WAY 558

Georgia Tech RADIO CLUB

Pron L. H. D. W.
 PSE QSL TNX QSL

1999



W4AQL

The Georgia Tech Amateur Radio Club traces its beginnings to 1910, when the call sign "4XG" was issued to the senior class in electrical engineering. The club started as a means to provide students with hands-on access to radio gear and to enhance the technology.

After World War I, the club was issued a new call sign "W4YA". The current call, W4AQL, belonged to a member of the club in the late 1920s. He arranged for his call letters to remain at Tech upon his departure.

Among GA Tech's accomplishments include providing emergency assistance during the 1985 Mexico City earthquake, the 1988 Hurricane Gilbert in Jamaica, and the 1989 Hurricane Hugo in South Carolina, USA. The club, an official student organization, is supported by the Student Government Association.

W4AQL
 Georgia • Fulton County • Grid: EM73ts
 Georgia Institute of Technology
 Amateur Radio Club
 332705 Georgia Tech Station
 Atlanta, Georgia 30332
 USA
<http://cyberbuzz.gatech.edu/w4aql>

CONFIRMING QSO WITH		DAY	MONTH	YEAR
UTC	MHz	RST	MODE 2X	
<input type="checkbox"/> PSE QSL		<input type="checkbox"/> TNX QSL		OP:

2014

W4AQL

Amateur Radio Club

Georgia Institute of Technology

1910 - 4XG
 4YA
 AAV
 WAAV
 W4YA

Georgia Tech
W4AQL
 Amateur Radio Club

CONFIRMING QSO WITH		DAY	MONTH	YEAR
UTC	MHz	RST	2-WAY	QSL PSE TNX

Georgia Tech Amateur Radio Club
 350 Ferst Drive
 Room 2211: Student Center Commons
 Atlanta, GA 30332
 Grid: EM73ts CQ Zone: 5 ITU Zone: 8

CONTESTING BEFORE COMPUTER LOGGING

Contesting before computers was much more difficult for the contester. Computer contest logging programs today do a number of chores such as logging, checking for duplicate contacts or dupes, determine needed multipliers, CW keying, voice recorder and rig control. Before logging programs, contesting was done with paper logs and dupe sheets. But with enough people at W4AQL the work could be spread among several people for a more efficient effort so one person is not doing all the work.

Figure 8-1 shows a typical pre-computer logging setup at W4AQL in the 1990 November Sweepstakes.



Figure 8-1 - 1990 November Sweepstakes at W4AQL. From L-R: N4VMD reading a book, N4ZZX checks for duplicate contacts, WD4DWM (now W4TM) is at the main operating position and W4RU (SK) looks for needed sections on the multiplier station.

One operator was at the main operating position and this position was where most of the operating was done. This main operator logged stations as they were worked with a paper log.

A table was setup near the main operator with a large sheet for checking duplicate contacts. A sample dupe sheet is shown in Figure 8-2. When a new station was worked it was entered into the paper log by the main operator and on the dupe sheet by someone known as the duper. The dupe sheet was organized in a matrix by call area and first letter of the suffix so calls could be found quickly. If the main operator was running and a station that was already worked called, then the duper would yell “Dupe!” so the main operator could hear it while wearing headphones and inform the caller that they were a duplicate contact. If the main operator was tuning around, or “searching and pouncing”, for stations, then the duper would carefully listen and check each call as the main operator tuned. If that station was already worked then the main operator would continue tuning.

The multiplier-operator to the right of the main operator used a second radio on another band looking for needed sections. If one was found this operator could signal the main operator to stop

while the new multiplier was worked. During this time, the Canadian Northwest Territories was usually the last section needed for a clean sweep of all ARRL sections.

	1	2	3	4
A	W1AW	N2AA KQZA	W3ABC	K4AM
B	K11B	N2BP		
C	N1CC			

Figure 8-2 - A sample dupe sheet similar to what was done at W4AQL before computer logging. If W1AW called, then the dupe operator would look at the cell under "1" and the first letter of the suffix "A". If W1AW appears in the box then the duper would yell "Dupe!" to let the operator know the station was already worked. If not, the operator would attempt to complete the QSO, When the station was worked the call would be entered in the box.

A program was written in 1976 to perform contest logging on the mainframe Cyber computer that was actually quite advanced for the time. But it was not used much past 1982 due to reliability issues with the Cyber computer. Cyber would usually go down sometime during the contest weekend which meant paper logging would need to be done until it came back on line.

The paper logging system at W4AQL made for great teamwork and required good communication between the operator and duper. The duper could help the operator with some marginal signals to make sure the information logged was correct.

CLUB MEMBER QSL CARDS

Box 110		GEORGIA TECH.		ATLANTA, GA.	
RADIO	4KH	Ur Sigs	wkd hr. 12/13	1927	at 2330 AM C. S. T.
U came in R.	6	wid.	Rae	Note.	QRM. QSS. on the 40 Meter-Band
XMITTER HARTLEY 50 Watts 1000 v. RAC 40 Meters Rad. 1.2 A		<h1 style="color: red;">4KY</h1>		RECEIVER 0/1/2 Reinartz ANTENNA Zeppin Hertz	
REMARKS <i>Pre Excuse lat O.S.I. op - I just gotten</i>					
Member ARRL	PSE QSL OM	73 es CUL	D.A. Perry (40)		Opr.

4KY is the personal call of John Mellon Griffin who listed his station location as Georgia Tech (Amateur Radio Stations of the United States, 1927). The operator listed on the card is Dabney Perry, 4QI from Tampa, FL. Perry most likely was using Griffin's station call. Back then rules were stricter on portable operation and where callsigns may be used. The callsign of the Georgia Tech Radio Club then was 4AV.

4KY became a Silent Key at the age of 20 in 1929, just over one year after the QSO on this card was made. There is a full page dedicated to his memory in the 1930 Georgia Tech yearbook "Blueprint" honoring his public service providing radio communication during the Florida hurricane of 1928.

His service to the people of Florida during the hurricane of 1928 was of outstanding importance in that it gave to the world the first news of the disaster and set in motion the machinery for relief by the Army and the Red Cross.

His excellent work in the Army Amateur System made him one of its outstanding figures. His successor may look with pride on his accomplishments and find in him an admirable example of the finest traditions of the American Amateur and the Army Amateur System.

(Signed) GEO. S. Gibbs, Major General, Chief Signal Officer of the Army

Radio QBY April 2, 1928
 Spark worked
 Your C. W. signals heard here. Time 11:25 A.M. Date March 31
 Phone
 Audibility g.s.m. Character 7 Bys Tone ic Wave st
 Receiving equipment used here Transmitter here consists of
3 circuit tuner 1500 ft. H.C.W.
2 steps of 10H circuit
variac Radio set
 Antenna: 4 wire 20m 50 ft
 Ground: Chicago 15 wire, 40' long, 15' dia
 Remarks: got 7 Bys. Had a calling
me using one step of 7 without antenna
ground. 7 Bys. lost in New York?
 Please QSL-QRK? Very truly yours,
Hazard Reeves
 Wilmington, N. C.

K2
GL

Mni tnx 19 66 67 68 69 70 Contest

SSB CW QSO

On: 10 15 20 40 80 160 Meters

Jan	1	2	3	4	5	6	7	Sept.
Feb	8	9	10	11	12	13	14	Oct.
Mar	15	16	17	18	19	20	21	Nov.
Apr	22	23	24	25	26	27	28	Dec.
May	29	30	31					

Time: GMT RADIO _____

RS(T): 5 6 7 8 9 9

731 K2	Good Luck	"Buz" Reeves
	BONNE CHANCE	Tuxedo Park
	Viel Glück	New York
	Buona Fortuna	U.S.A.
	元気にやりましたよ!	
	Bon Sorte	
	Bonno xopóuero	
	Buena Suerte	QSL via ARRL

Hazard "Buz" Reeves, (1906-1986), 4RZ and later W2HJR and K2GL, was the Vice President of the Georgia Tech Radio Club when he was a senior in 1927-28. (Blueprint, 1928).

BIBLIOGRAPHY

(1920, June). *Telephone Engineer*, p. 12.

(2017). Retrieved from Arthur Murray Dance Centers: <https://arthurmurray.com/>

(2017, December 25). Retrieved from Amateur Radio on the International Space Station:
<http://www.ariss.org/>

Alfred Rumble. (2018, March 30). Retrieved from Georgia Tech Alumni Living History:
<http://www.livinghistory.gatech.edu/s/1481/45-lh/index.aspx?sid=1481&gid=45&pgid=9036>

Amateur Radio Stations Callbook. (1929). Radio Division, Department of Commerce.

Amateur Radio Stations of the United States. (1931).

Banks, S. (1985, August 4). *W4AQL contacts WØORE*. Retrieved from YouTube:
<http://www.youtube.com/watch?v=gYG8jil-II>

Banks, S. (2013). Georgia Tech Amateur Radio Club Timeline.

Banks, S. (2021). *Georgia Tech Radio Club Locations*. Retrieved from <http://goo.gl/maps/YD1zz>

Blake, E. S., & Landsea, C. (2011). *The Deadliest, Costliest, and Most Intense United States Tropical Cyclones From 1851-2010*. Miami, FL: National Weather Service, National Hurricane Center.

Blueprint. (1913).

Blueprint. (1920).

Blueprint. (1924).

Blueprint. (1928).

Blueprint. (1938).

Blueprint. (1941).

Blueprint. (1949).

Blueprint. (1950).

Blueprint. (1954).

Blueprint. (1986).

Blueprint. (1990).

Carver, A. (2017, December 21). (S. Banks, Interviewer)

Cisco, D. (2013, May 30). GA Tech Calls.

Citizens Radio Callbook - Fall. (1924).

Commercial and Government Radio Stations. (1913, July). pp. 17-18.

Crouch, R. (2014, October 18). W4AQL and WREK. (S. Banks, Interviewer)

Department of Commerce, Radio Division. (1927). *Amateur Radio Stations of the United States*.

Directory of Amateur Calls. (1920, January). *QST*, p. 300.

Edwards, T. (2004, April 21). Georgia Tech Alumni Association Living History Program. (M. Somers, Interviewer)

Fay, B. (2013, October 8). Letter (W4NS).

Fleming, K. (1960, June 26). World's First Dance by Radio. *The Atlanta Journal and the Atlanta Constitution*, p. SM20.

Georgia Tech Announcements 1906-1907. (1907). Atlanta, GA.

Georgia Tech Announcements 1912-1913. (1913).

Georgia Tech Announcements 1913-1914. (1914).

Georgia Tech Announcements 1917-1918. (1918).

Georgia Tech Digital Portal. (2020). Retrieved from Georgia Tech Archives:
<https://history.library.gatech.edu/items/show/13097>

Georgia Tech Radio Club Has Weathered Years of Difficulty. (1949, October 21). *The Technique*, p. 3.

Georgia Tech Traditions. (2017). Retrieved from <http://www.ramblinwreck.com/trads/geot-trads.html>

Goettling, J. D. (2007). *Ramblin' Wrecks from Georgia Tech*. Atlanta, GA: Joseph P. Irwin.

'Ham' Operator Saves Ship. (1977, July 18). *The Atlanta Constitution*, p. 8A.

Harrison, E. D. (1958). *President's Report*.

Hazard Reeves. (2002). Retrieved from Cinerama Adventure:
<http://www.cineramaadventure.com/reeves.htm>

Home Sweet Home? Well, not exactly. (2013). Retrieved from Georgia Tech Living History:
<https://www.facebook.com/media/set/?set=a.54164742251139.1073741859.333457040036846&type=1>

Jacket Radio Club Operates 300 Watt Transmitter in 'Y'. (1937, October 22). *The Technique*, p. 5.

Jim Cain, W. (1977, May). Results, 43rd ARRL November Sweepstakes. *QST*.

Kardasen, G. (2015, September 17). W1MEW. (S. Banks, Interviewer)

Large Crowd Dances to Wireless Music. (1920, March 28). *The Atlanta Constitution*, p. 20B.

Lott, C. (1984). *W4AQL Satellite Operating System*.

Meeting Minutes. (1974, May 19). *Georgia Tech Amateur Radio Club*.

Meeting Minutes. (1984, September 24). *Georgia Tech Amateur Radio Club*.

Nail, J. (1979, January 24). Open Letter to GTARC Members.

NASA Astronauts and Astronaut Candidates Earn Amateur Radio Licenses . (2011, June 21). Retrieved from ARRL: <http://www.arrl.org/news/nasa-astronauts-and-astronaut-candidates-earn-amateur-radio-licenses>

Radio Club Contacts International Space Station. (2006, January 27). *Technique*, p. 11.

Radio Club Given New Receiver Set By Student Council. (1940, December 20). *The Technique*.

Radio Club Starts Operation. (1928, October 12). *The Technique*.

Radio News. (1925, December 4). *The Technique*, p. 8.

Radio News. (1927, February 25). *The Technique*.

Radio Relay League Has Tech Branch. (1929, November 8). *The Technique*.

(1923). *Radio Service Bulletin No. 79*. Department of Commerce.

Radio Station Made Key Control Spot For Defense Communication Network. (1941, December 19). *The Technique*, p. 1.

Radio Station Will Send Your Messages For Free. (1923, January 19). *The Technique*.

Results from Sweepstakes Challenge. (1976, November 29). *The Local Oscillator*.

Riley, M. R., & Ewald, S. (1985, December). The "Mexican Connection". *QST*, pp. 54-56.

Rumble, A. (1995, August 11). Georgia Tech Living History. (M. Somers, Interviewer)

Sager, P. (1994, May). An Overview of Amateur Callsigns - Past and Present. *QST*, pp. 54-59.

Signal Corps at Work. (1921, March 4). *The Technique*.

Sumner, D. (1985, December). "It Seems to Us...". *QST*, p. 9.

Tech Radio Club Meets. (1930, October 10). *The Technique*, p. 1.

Thomas, E. W. (2014). *Atlanta Time Machine*. Retrieved from http://atlantatimemachine.com/misc/skyline_25b.htm.

Titus, T. (2013, October 5). Interview with K4MVL. (S. B. W4ATL, Interviewer)

Transmitter is Built By Radio Club. (1936, December 18). *The Technique*, p. 1.

Tuning in to Hurricane Floyd. (1999, September 20). *The Whistle*, p. 1.

Well Done, W5LFL. (1984, February). *QST*, pp. 11-14.

Wilkins, D. (1976, May 19). Letter to WREK.